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PROGRAMME OF WORK OF THE INTERGOVERNMENTAL WORKING GROUP OF EXPERTS ON INTERNATIONAL STANDARDS OF ACCOUNTING AND REPORTING: REVIEW OF IMPORTANT CURRENT DEVELOPMENTS AT THE GLOBAL AND NATIONAL LEVELS IN THE FIELD OF ACCOUNTING AND REPORTING BY TRANSNATIONAL CORPORATIONS, ON THE BASIS OF DOCUMENTATION RECEIVED BY THE UNITED NATIONS CENTRE ON TRANSNATIONAL CORPORATIONS FROM (i) INDIVIDUAL MEMBER STATES; (ii) INTERGOVERNMENTAL ORGANIZATIONS; AND (iii) NON-GOVERNMENTAL ORGANIZATIONS

Environmental disclosures: international survey of corporate reporting practices**

Report of the Secretary-General

SUMMARY

The present report contains the findings of a survey of 222 transnational corporations in the area of environmental information disclosure. The main purpose of the survey was to assess the extent to which enterprises in a number of major global industries were, or were not, disclosing information

* E/C.10/AC.3/1992/1.

** All quoted statements of corporations are derived from their 1989, 1990 or 1991 annual reports.

consistent with the recommendations circulated to Governments and interested parties by the Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting. The survey reconfirmed on a large scale that while transnational corporations are aware of environmental issues, their disclosures remain qualitative, descriptive, partial and difficult to compare. Not only was there little quantitative information but often no time period was attached to the qualitative information. Moreover, there was no relation drawn among amounts spent, results achieved and targets set. Therefore, it was not possible to gauge the environmental performance of the corporations, let alone the impact of their environmental activities on their financial results.

CONTENTS

		Paragraphs	Page
INTRODUCTION		1 - 4	4
I.	INTERNATIONAL SURVEY: SCOPE AND METHODOLOGY	5 - 9	4
	A. Sample	5 - 6	4
	B. Survey methodology	7 - 9	5
II.	EXTENT OF ENVIRONMENTAL DISCLOSURES: OVERALL SURVEY RESULTS	10 - 11	6
III.	ENVIRONMENTAL POLICIES AND PROGRAMMES	12 - 15	8
IV.	KEY ENVIRONMENTAL IMPROVEMENTS	16 - 17	10
V.	EMISSION LEVELS	18 - 23	12
VI.	GOVERNMENT LEGISLATION	24 - 28	14
VII.	LEGAL PROCEEDINGS AND NOTES TO THE ACCOUNTS	29 - 36	17
VIII.	FINANCIAL EFFECTS OF ENVIRONMENTAL PROTECTION MEASURES	37 - 44	20
IX.	OTHER ENVIRONMENTAL INFORMATION: SPECIAL REPORTS AND ENVIRONMENTAL AUDITS	45 - 48	25
X.	CONCLUSIONS	49 - 54	27

Annexes

I.	SAMPLE CORPORATIONS	30
II.	COUNTRY OF DOMICILE OF SAMPLE CORPORATIONS	37

INTRODUCTION

1. Green accounting, or accounting for the environment, is a major issue of public concern currently being addressed by the Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR). The first report of the Secretary-General (E/C.10/AC.3/1990/5), on information disclosure relating to environmental measures, considered some preliminary research on the nature, benefits and costs of environmental disclosures, together with some tentative recommendations.

2. The second report of the Secretary-General (E/C.10/AC.3/1991/5), on accounting for environmental protection measures, reviewed the response from Governments, standard-setting agencies and industry to the Group's initiative in this area. According to the report, the Group had been encouraged to note that it had served as a catalyst for further developments and research among other groups. 1/ In addition, the results of a survey of industrial practices and attitudes on accounting for environmental measures were reviewed, with particular reference to the assessment of environmental expenditures and recognition of environmental liabilities.

3. The Group decided to make certain recommendations following from its deliberations on the second report concerning environmental disclosures for consideration by Governments and interested parties. These included a number of relevant items that could be considered for inclusion by the Board of Directors in its report/management discussion, in accounting policy notes and in the notes to financial statements. The intent of the recommendations was to provide minimum guidelines that, if followed, would produce consistent and comparable information over time and across corporations on environmental activities and their financial effects.

4. The Group also decided that it should continue to monitor information disclosure in this area and the evolution of accounting practices. The purpose of this report is to present the results of an international survey of corporate reporting practices with respect to environmental disclosures. The main purpose of the survey was to assess the extent to which enterprises in a number of major global industries were, or were not, disclosing information consistent with the Group's recommendations. The survey further aimed at identifying any additional items of information disclosure worthy of attention, as well as any outstanding or unusual examples of practice.

I. INTERNATIONAL SURVEY: SCOPE AND METHODOLOGY

A. Sample

5. Six major global industries - namely, chemicals; forestry and forestry products; metals; motors; petroleum and petrochemicals; and pharmaceuticals, soaps and cosmetics - had been chosen as the basis of the survey. The grounds for this selection had been the belief that such industries were particularly

likely to have environmental information to report, since they tended to have a significant impact upon the environment owing to the types of raw materials they consumed, the production processes they employed or the nature of their end product.

6. The initial sample comprised all corporations in those industries listed in either the Fortune Global 500 of July 1990 2/ or the Billion Dollar Club, a United Nations Centre on Transnational Corporations database. The 315 corporations comprising the initial sample were requested to supply their 1990 annual reports and accounts. The result was a final sample of 222 corporations, as detailed in annex I, representing a response rate of 71 per cent. Of these corporations, 204 provided their 1990 report and accounts; 13, their 1989 report and accounts; and 5, their 1991 report and accounts. These corporations were distributed over a large number of countries, as shown in annex II, with the United States of America having been the most common country of domicile, followed by Japan and Germany.

B. Survey methodology

7. The survey was designed to capture the environmental information disclosures made available to ordinary shareholders in the normal course of operations. Accordingly, corporations were asked to provide the English-language version of their annual report and accounts, as normally provided to shareholders. A number of United States corporations also provided a copy of their annual 10K report required by the Securities and Exchange Commission. When these two documents were provided together as an integral package, both the annual report and accounts, and the 10K report, were considered. When, instead, the two documents were separate, only the annual report and accounts were considered. A total of nine corporations (4 per cent) stated in their report that a separate environmental statement was available upon request. As these statements were not sent to shareholders, except upon special request, they were not included in the survey that follows.

8. A survey instrument was designed to capture the type and extent of environmental disclosures, whether financial, quantitative or qualitative in nature, which were provided both in the annual accounts and notes and in the review of operations, report of the board of directors and management discussion of results. The survey instrument was very largely based upon the recommendations for environmental accounting and reporting contained in document E/C.10/AC.3/1991/5; as such, the survey included information disclosures relevant to the following major areas of concern:

(a) Policies and programmes about the environment;

(b) Major environmental improvements achieved;

(c) Emission levels;

(d) Impact of governmental legislation;

(e) Legal proceedings;

(f) Financial impacts, whether operating, capital, research and development or remedial;

(g) Information in the notes to the accounts;

(h) Other pertinent environmental information.

9. The results of the survey are presented as follows: first, an overview of the disclosure results is given and, subsequently, each area of interest is examined in some detail. An industry analysis, as well as a total sample analysis, is presented.

II. EXTENT OF ENVIRONMENTAL DISCLOSURES: OVERALL SURVEY RESULTS

10. From table 1, which shows the overall extent of disclosure in each of the areas of interest for each industry as well as for the entire sample, it can be seen that the vast majority of corporations appeared to be aware of the importance of the environment and their impact upon it. Indeed, it is encouraging to note that 191 corporations (86 per cent) reported at least some information regarding their environmental impacts. There do appear, however, to have been some differences in the levels of disclosure across the six industries considered. While 100 per cent of the forestry corporations reported at least some information and while the level of disclosure was also particularly high in petrochemicals (95 per cent), chemicals (90 per cent) and metals (87 per cent), disclosure levels were significantly lower in pharmaceuticals (79 per cent) and motors (76 per cent).

11. The environmental information disclosed tended to be descriptive or qualitative, especially in respect of environmental policies, programmes undertaken and major areas of concern. While information of this kind was provided by a total of 155 corporations (70 per cent), there were significant industry differences, ranging from a high of 94 per cent for the forestry industry to only 35 per cent for the motor industry - the only industry for which environmental policies and programmes were not the most commonly found item of information. For the motor industry, the most commonly found item of information was a description of key or major environmental improvements, although that item was provided by only around half of motor corporations (49 per cent). Again, the motor industry figure was lower than that found across all industries (62 per cent). The only other item disclosed in the majority of reports across all industries was information on the financial impacts of environmental measures undertaken, although more often than not (as will be shown below), this was qualitative rather than quantitative information. However, at least some information on the financial impacts of environmental actions was found in the reports of the majority of corporations

Table 1. Environmental disclosures by major corporations in key industries

Item disclosed	All corporations (222)		Pharmaceuticals (28)		Motors (37)		Metals (38)		Forestry (31)		Petrochemicals (38)		Chemicals (50)	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Environmental policies and programmes	155	70	15	54	13	35	28	74	29	94	29	76	41	82
Key environmental improvements	138	62	13	46	18	49	21	55	24	77	25	66	37	74
Emission levels	41	19	2	7	5	14	3	8	8	26	2	5	21	42
Governmental legislation	74	33	3	11	9	24	9	24	19	61	21	55	13	26
Legal proceedings	51	23	6	22	5	14	2	5	8	26	16	42	14	28
Financial impacts	150	68	9	32	17	46	25	66	29	93	29	76	41	82
Capital expenditures	99	45	5	18	2	5	20	53	21	68	22	58	29	58
Operating costs	35	16	1	4	0	0	7	18	5	16	8	21	14	28
Research and development expenditures	86	39	3	11	16	43	18	47	11	36	19	50	19	38
Remedial expenditures	25	11	4	15	0	0	1	3	2	7	5	13	13	26
Information in notes to the accounts	32	14	3	11	3	8	3	8	4	13	9	24	10	20
Other information	29	13	4	14	1	3	2	5	5	16	8	21	9	18
Total of corporations disclosing information about the environment														
	191	86	22	79	28	76	33	87	31	100	36	95	45	90

Note: Figures in parentheses to the right of column headings indicate total number of corporations responding to survey.

/...

(68 per cent), and especially those of petrochemicals corporations (76 per cent) and chemicals corporations (82 per cent). While many corporations did not break down financial impact into its constituent parts, a significant number provided information on capital expenditures (45 per cent) and research and development expenditures (39 per cent). Disclosures of operating expenditures and remedial expenditures were far less common, however (16 per cent and 11 per cent respectively). Other areas where a relatively low level of disclosure was evident were emission levels, governmental legislation, legal proceedings and information in notes to the accounts.

III. ENVIRONMENTAL POLICIES AND PROGRAMMES

12. The majority of the corporations surveyed disclosed at least some information on the major environmental issues facing them (see table 2). Thus a total of 155 corporations (70 per cent) disclosed some information on environmental policies and programmes with motors the only industry where disclosure was not the majority practice.

13. Discussions of environmental issues tend to take one or more of three possible forms. Firstly, corporations may simply describe the major environmental issues facing their industry. Such discussions are typically fairly brief, cover a limited range of issues and are found not in a clearly labelled environmental policy section of the report but, instead, constitute an integral part of the chairman's statement or the review of operations. The second type of disclosure, namely, descriptions of actions or programmes undertaken to mitigate certain of the environmental problems created by corporate activities, goes somewhat further. Again, these are qualitative statements and tend to concentrate upon a limited range and number of issues. While there were clear differences in the incidence of such disclosures across industries, as shown in table 2, what is probably even more noticeable were the differences between those industries in the issues covered. Thus the most common issue in the motor industry was emission levels followed by the use of chlorofluorocarbons (CFCs), as illustrated by the two-page environmental section of Nissan Diesel (Japan). In the chemical industry, especially in European corporations, emission levels received the most attention, as illustrated by the lengthy disclosures of such corporations as Bayer (Germany) and Roche (Switzerland). In contrast, the North American petrochemical industry appeared especially concerned with issues of safety and protection of the environment against accident, as exemplified by the two-page environmental protection statement of Amerada Hess (United States), which concentrated entirely upon those issues. The North American forestry industry appeared particularly concerned with issues of recycling as exemplified by the longest environmental issues report, that of Stone Container (United States), which spent nine pages mainly describing its recycling efforts. In Europe, on the other hand, the issue of greatest concern appeared to be the environmental impact of production processes, especially bleaching, as illustrated by Metsa Serla and Kymmene, both of Finland.

Table 2. Disclosure of environmental policies and programmes

Description of	All corporations (222)		Pharmaceuticals (28)		Motors (37)		Metals (38)		Forestry (31)		Petrochemicals (38)		Chemicals (50)	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pertinent issues	92	41	6	21	11	30	21	55	17	55	16	42	21	42
Policy adopted	87	39	11	39	8	22	10	26	17	55	20	53	24	48
Programmes undertaken	97	44	9	32	4	11	11	29	27	87	18	47	28	56
						Total of corporations disclosing information								
	155	70	15	54	13	35	28	74	29	94	29	76	41	82

Note: Figures in parentheses to the right of column headings represent total number of corporations responding to survey.

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14. Policy statements were provided by slightly fewer corporations (39 per cent) than provided a description of pertinent issues (41 per cent). Again, the figures showed marked industry differences ranging from 22 per cent for motors to 55 per cent for forestry. Policy statements did not describe specific issues or actions undertaken but, instead, set forth corporate attitudes towards the environment. Those statements tended to reflect the way in which environmental concerns impacted upon corporate objectives and decision-taking, as illustrated by Hoechst (Germany), which began its environmental protection section by stating its "guiding principles" in the following terms:

> "Hoechst believes in acting with farsightedness and responsibility in matters of safety and environmental protection. These considerations have equal standing with our objectives to perform efficiently among international competition."

15. Such statements generally constituted only a small part of the environmental disclosures made and, as given, were supported by some indication of activities undertaken or expenditures made. However, this was not always the case. Some corporations provided only a policy statement - albeit in the case of Upjohn (United States), a fairly detailed one - with little or no supporting evidence to allow for its verification.

IV. KEY ENVIRONMENTAL IMPROVEMENTS

16. In document E/C.10/AC.3/1991/5, the Secretary-General recommended disclosure of information concerning environmental improvements that had been made in key areas. It is encouraging, therefore, to find that 138 corporations (62 per cent) provided such information. As shown in table 3, the highest level of disclosure was found in the forestry industry (77 per cent) while the lowest level was found in the pharmaceutical industry (46 per cent). However, across all industries the majority of corporations provided qualitative rather than quantitative information. Indeed, only 21 per cent (46 corporations) disclosed quantitative details although the figure rose to a high of 38 per cent in the chemicals industry. Similarly, when the period covered is examined, it is apparent that most corporations failed to disclose the time period concerned, especially when only qualitative descriptions were given. Typical of those descriptions were statements to the effect that a considerable effort had gone into improving emission levels of engines (motors) or that capital expenditures had been made to improve emission levels (chemicals). When the period covered by such disclosures was explicitly stated, a clear majority described only those activities undertaken in the previous year, especially when those disclosures were part of the review of operations, rather than of a specific or separate environmental statement.

Table 3. Disclosure of key environmental improvements

	All corporations (222)		Pharmaceuticals (28)		Motors (37)		Metals (38)		Forestry (31)		Petrochemicals (38)		Chemicals (50)	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Description														
Non-quantified	125	56	11	39	18	49	19	50	19	61	23	61	35	70
Quantified	46	21	3	11	2	5	6	16	8	26	10	26	19	38
Areas covered														
Product improvements	61	28	3	11	11	30	5	13	13	42	10	26	19	38
Liquid effluent	49	22	1	4	1	3	4	11	16	52	8	21	19	38
Waste gas/air	83	37	3	11	13	35	12	37	12	39	15	40	26	52
Solid waste	30	14	7	25	1	3	5	13	4	13	3	8	10	20
Remediation	15	7	1	4	1	3	2	5	4	13	5	13	2	4
Recycling	53	24	4	14	3	8	12	32	15	48	9	24	10	20
Power used	22	10	0	0	5	14	4	11	7	23	1	3	5	10
Water used	19	9	0	0	0	0	1	3	7	23	3	8	8	16
Accidents/safety	29	13	1	4	0	0	2	5	2	7	16	42	8	16
Working environment	5	2	0	0	0	0	1	3	1	3	2	5	1	2
Other	48	22	5	18	3	8	6	16	8	26	8	21	18	36
Period covered														
One year	45	20	6	21	6	16	5	13	7	23	16	42	5	10
Five years	5	2	0	0	1	3	0	0	0	0	3	8	1	2
Since policy introduced	8	4	0	0	0	0	1	3	4	13	0	0	3	6
Other period	5	2	1	4	0	0	0	0	1	3	1	3	2	4
Not stated	75	34	6	21	11	30	15	40	12	39	5	13	26	52
Total of corporations disclosing information	138	62	13	46	18	49	21	55	24	77	25	66	37	74

Note: Figures in parentheses to the right of column headings represent total number of corporations responding to survey.

E/C.10/AC.3/1992/3
English
Page 11

17. Looking at the issues raised reveals that the most common concern was emissions into the air. This issue raised by over one third of corporations in all industries except pharmaceuticals, was followed (in descending order of prevalence) by product improvements (especially common in the motor, chemical and forestry industries), recycling (especially common in the metals and forestry industries) and liquid effluent (especially common in the chemicals and forestry industries). In contrast, less than 10 per cent of all corporations raised the issues of remediation, water usage and the working environment. Other issues raised included, for example, noise reduction and tree planting at industrial sites (Indian Oil Corporation, India), pesticide use (Montedison, Italy), transportation safety (Union Carbide, United States) and packaging (Pechiney, France). However, also common for this category of other issues were statements concerning such issues as hazardous waste and environmental pollution, which proved too general and vague to be placed in any specific category.

V. EMISSION LEVELS

18. The extent of disclosure of information relating to emission levels is reported on in table 4. The overall level of disclosure was rather low, with only 19 per cent of corporations disclosing any relevant information. However, the figure rose to 26 per cent in the forestry industry and to 42 per cent in the chemicals industry. While the most common type of disclosures were quantified disclosures, in particular of actual emission levels achieved, information on targets was considerably rarer. Furthermore, a comparison of actual emission levels with targets was quantified by only four corporations; unfortunately, this kind of information was more commonly disclosed in terms of a non-quantified description. The most common kind of emissions information related to emissions into the air, and disclosure of such information was especially common among chemical corporations (38 per cent). In contrast, information on solid waste was provided by only eight corporations and waste water information was found in only five cases.

19. In contrast to other areas of environmental information, one common approach towards emissions disclosures was the provision of graphical information. In many cases such information related to specific plants and pollutants and covered a long time period, as illustrated by Dofasco (Canada), which provided graphs of the previous 20 years of residual water particulate and particulate air emissions at its Hamilton steel operation. Another example was DSM (Netherlands), with a six-year graph of hydrocarbon emissions from its Limburg site. A further example was ICI (United Kingdom) which, instead of disclosing the level of emissions, provided a graph of the percentage reduction in yearly emissions from German resin manufacturing plants in the previous four years.

20. Rather less common were attempts to produce figures for the entire corporation or for a number of plants, although noticeable exceptions to this approach included MoDo (Sweden) and Hoechst (Germany), while Asahi Chemical (Japan), went even further by comparing emissions from its works with the Japanese industrial average.

Table 4. Disclosure of emission levels

Item disclosed	All corporations (222)		Pharmaceuticals (28)		Motors (37)		Metals (38)		Forestry (31)		Petrochemicals (38)		Chemicals (50)	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Emission targets set														
Quantified	17	8	1	4	0	0	0	0	3	11	1	3	12	24
Non-quantified	4	2	0	0	0	0	1	3	2	7	0	0	1	2
Emission levels achieved														
Quantified	28	13	2	7	2	5	1	3	3	10	2	5	18	36
Non-quantified	7	3	0	0	1	3	1	3	2	7	0	0	3	6
Emission levels achieved relative to targets														
Quantified	4	2	0	0	0	0	0	0	3	10	0	0	1	2
Non-quantified	7	3	0	0	1	3	0	0	5	16	0	0	1	2
For														
Liquid effluent	14	6	1	4	2	5	1	3	5	16	0	0	5	10
Waste gas/air	33	15	2	7	2	5	3	8	5	16	2	5	19	38
Waste water	5	2	0	0	0	0	0	0	2	7	0	0	3	6
Solid waste	8	4	1	4	0	0	0	0	5	16	0	0	2	4
Other	3	1	0	0	2	5	0	0	0	0	0	0	1	2
	Total of corporations disclosing information													
	41	19	2	7	5	14	3	8	8	26	2	5	21	42

Note: Figures in parentheses to the right of column headings represent total number of corporations responding to survey.

21. A small number of corporations concentrated upon disclosing information about planned and future targets rather than past achievements, as illustrated by Neste (Finland), which stated that:

> "The new sulphur recovery unit at Porvoo will reduce sulphur dioxide emissions in 1992 to under 10,000 tonnes a year, less than 20 per cent of what they were in 1980. Planning is also under way on reducing sulphur emissions yet further, although the cost per each extra tonne of sulphur dioxide reduced will be many times higher than that for plants just starting to cut their sulphur emissions.
>
> "In Ontario a decision was taken to reduce the sulphur content of diesel and light fuel oil to 0.05 per cent, a very low figure by European standards."

22. The diversity in practice can be seen further when disclosures comparing actual and target emissions are considered. For example, some disclosures were made purely for domestic plants, as was the case for Rohm & Haas (United States), which stated that:

> "Air emissions in the United States are reported to the public and the government using data required under provisions of the Superfund Reauthorisation Act (SARA). In the most recent SARA report, air emissions were 25 per cent lower than the previous year. Rohm and Haas remains committed to its publicly stated goal of 75 per cent reduction in SARA air emissions."

23. However, other corporations appear to have provided similar information for the entire corporation, as illustrated by Monsanto (United States):

> "In 1988, management committed to a 90 per cent reduction in toxic air emissions by the end of 1992, a goal that will require the development and installation of new technology and additional capital expenditure. Reduction of 39 per cent was accomplished through 1989. Compilation of data for 1990 is not complete; however, further reduction has been achieved."

VI. GOVERNMENT LEGISLATION

24. Taken overall, information on legislation was given in one form or another by 33 per cent of the sample (74 corporations). In a number of cases, this information was clearly linked to information on emissions levels. However, as can be seen from table 5, disclosures concerning legislation, unlike emissions information, were particularly common in the forestry (61 per cent) and petroleum (55 per cent) industries compared with the chemical industry (26 per cent), although such information was even less common in the pharmaceutical industry (11 per cent). As for information relating to emissions legislation, the most commonly mentioned types of issues were those concerned with emissions into the air (20 per cent), with every

Table 5. Disclosure of information relating to government legislation

Item disclosed	All corporations (222)		Pharmaceuticals (28)		Motors (37)		Metals (38)		Forestry (31)		Petrochemicals (38)		Chemicals (50)	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Description of legislation	22	10	2	7	2	5	3	8	8	26	4	11	3	6
Impact on measures undertaken	53	24	0	0	5	14	6	16	13	42	19	50	10	20
Extent meeting legislation	33	15	2	7	4	11	4	11	13	42	5	13	5	10
For														
Liquid effluent	17	8	0	0	0	0	1	3	9	29	4	11	3	6
Waste gas/air	44	20	1	4	8	22	2	5	8	26	17	45	8	16
Waste water	10	5	0	0	1	3	2	5	4	13	1	3	2	4
Solid waste	11	5	1	4	0	0	1	3	7	23	2	5	0	0
Products	13	6	0	0	1	3	0	0	1	3	10	26	1	2
Other	19	9	1	4	0	0	4	11	6	19	4	11	4	8
	Total of corporations disclosing information													
	74	33	3	11	9	24	9	24	19	61	21	55	13	26

Note: Figures in parentheses to the right of column headings represent total number of corporations responding to survey.

other type of issue mentioned by less than 10 per cent of the sample. However, reference to legislation concerning liquid effluent was quite common among forestry corporations (29 per cent) as was reference to product-based legislation among petrochemical corporations (26 per cent).

25. While the issues covered varied considerably, reflecting both differences in the legislation in particular countries and the important concerns of the various industries, four types of disclosures were apparent. At the simplest level were statements that the corporation was aware of the existence of certain environment-related legislation; such statements were illustrated by that of Toray (Japan):

> "As Toray's manufacturing activities progressed in the favourable economic climate of the 1960s, the Company recognised the importance of accident prevention and pollution control in advance of the passage of the 1967 Basic Law for Environmental Pollution Control."

26. Slightly more information was given by the 33 corporations (15 per cent) that described the extent to which they were meeting existing legislative requirements, as illustrated by the Indian Oil Corporation (India):

> "Ambient air quality was monitored regularly by all the refineries and the concentration levels found to be well within stipulated national standards, throughout the year."

27. A third and more common approach entailed descriptions of new legislation coupled with an indication of its likely impact. Such impacts were discussed either in terms of the actions that had been taken by the corporation, as illustrated by Roche (Switzerland):

> "In order to comply with the new, stricter nitrous oxide regulations in Switzerland, low NO_x burners and de-NO_x plants have been installed or are in the planning stage."

or in terms of the cost of meeting the legislation, as illustrated by MacMillan Bloedel (Canada):

> "New provincial water quality regulations for BC [British Columbia] require improved standards of suspended solids, biochemical oxygen demand, acute fish toxicity and the amount of organically-based chlorine. The new provincial regulation for organically-based chlorine meets the established standards in the world today.
>
> "The estimated cost to MB [MacMillan Bloedel] to meet all of these new standards is over $300 million, to be spent over the next three to five years. The regulations place a heavy capital burden on the company without adding any productive capacity. They were imposed with a tight deadline and require considerable cashflow at a time when markets are poor."

28. The best level of disclosure was achieved by those corporations that clearly described the new legislation as well as the extent to which they were currently meeting it and the action that would be required for complete compliance, as illustrated by Norsk Hydro (Norway):

> "In 1990 the Norwegian environmental authorities set new emission limits for the Ardal smelter. These stipulate that fluoride emissions shall be reduced to 16 kg per hour by 1 July 1993. At the end of 1990 emissions were about 18 kg per hour, after significant improvements had already been achieved. Ardal Verk has decided to build a new sulphur scrubbing unit which will lead to a substantial reduction in emissions of sulphur dioxide."

VII. LEGAL PROCEEDINGS AND NOTES TO THE ACCOUNTS

29. In document E/C.10/AC.3/1991/5, it was recommended that corporations should disclose, in the report of the board of directors, any material legal proceedings under environmental laws. In addition, corporations should disclose, in the notes to the accounts, the accounting policies with respect to recording liabilities, provisions, reserves and contingent liabilities, as well as the amounts of liabilities, provisions and reserves and information on contingent liabilities.

30. However, it appears that when any of this information was provided it was most often disclosed as a single item rather than disclosed separately as information on environmental proceedings, accounting policies, amounts charged to the accounts and contingent liabilities. Thus material environmental proceedings were most often disclosed as a part of contingent liabilities, and under this item a description of accounting policies for liabilities, provisions or reserves and the related amounts was also included. Environment-related expenditures incurred in the normal course of operations were almost always disclosed in the review of operations rather than in the notes to the accounts. The actual location of such information in the annual report and accounts may not at first sight be considered important. It may, however, affect the reliability or credibility of the information as perceived by the reader, since only the accounts and related notes are audited. The issue of the disclosure of expenditures related to normal operations is explored more fully in the subsequent discussion of financial effects.

31. This is an area where it is particularly difficult to draw conclusions regarding the level of disclosure or non-disclosure, as non-disclosure may occur either because the corporation has no material legal proceedings or because it has decided, for a variety of possible reasons, not to disclose information on legal proceedings. However, as shown in table 6, a total of 51 corporations (23 per cent) provided some information in this area. It is noteworthy that the level of disclosure also varied considerably across the six industries from a low of only 5 per cent for the metals corporations to a high of 42 per cent for the petrochemicals corporations. Legal proceedings were described by a total of 28 corporations (13 per cent), while a somewhat

Table 6. Disclosure of legal proceedings under environmental laws and notes to the accounts

Item disclosed	All corporations (222)		Pharmaceuticals (28)		Motors (37)		Metals (38)		Forestry (31)		Petrochemicals (38)		Chemicals (50)	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Description of														
Legal proceedings	28	13	3	11	2	5	1	3	4	13	11	29	7	14
Likely outcome	40	18	6	21	4	11	1	3	6	19	13	34	10	20
Actual costs incurred	9	4	0	0	1	3	0	0	1	3	4	11	3	6
Actions undertaken	14	6	0	0	1	3	0	0	4	13	3	8	6	12
Referral to Superfund sites	19	9	5	18	1	3	0	0	1	3	6	16	6	12
Accounting policy adopted	9	4	1	4	0	0	1	3	0	0	3	8	4	8
Amounts in notes with respect to														
Costs	3	1	0	0	1	3	0	0	0	0	1	3	1	2
Liabilities	7	3	0	0	2	5	1	3	0	0	1	3	3	6
Provisions	6	3	1	4	0	0	0	0	2	6	1	3	2	4
Reserves	4	2	0	0	0	0	0	0	0	0	2	5	2	4
Total of corporations disclosing information	51	23	6	21	5	14	2	5	8	26	16	42	14	28

Note: Figures in parentheses to the right of column headings represent total number of corporations responding to survey.

greater number described the likely outcome (18 per cent). However, the actual costs incurred and actions undertaken because of such legal proceedings were each disclosed by less than 10 per cent of the sample corporations. Accounting policy statements, whether for costs, liabilities, provisions or reserves, were disclosed by only nine corporations (4 per cent). Quantification of any of these items was even less common: the highest number of disclosures (by seven corporations, or 3 per cent) occurred for liabilities.

32. While some European corporations such as Norsk Hydro (Norway), disclosed environmental contingent liabilities, disclosures in this area were almost entirely a North American - and more particularly a United States - phenomenon. What is perhaps most noteworthy about the disclosures of United States corporations regarding their contingent liabilities was the lack of detail for the disclosures provided - which, typically, simply stated that legal proceedings either currently existed or were likely to exist in the future; that the outcome could not be ascertained; and that, in any case, that outcome was unlikely to have a materially adverse impact upon the corporation - as illustrated by the disclosures contained in the financial review or management discussion of Amerada Hess (United States):

> "The Corporation anticipated that there will be substantial future costs of assessing and remediating environmental sites, including sites where the Corporation had been named a potentially responsible party under the Superfund Legislation or where corrective action may be necessary at solid waste management units under permits issued pursuant to the Resource Conservation and Recovery Act. However, the timing, extent and cost of many such projects are currently not determinable. Where the costs of assessing and remediating known environmental sites can be reasonably estimated, such costs are expected to be adequately covered by existing reserves."

33. Rather than argue that any costs were likely to be covered by existing reserves, other corporations argued instead that such costs were not likely to have a material impact. For example, Upjohn (United States) stated, in the notes to the accounts, that:

> "The company is of the opinion that although the outcome of the litigation and proceedings referred to above cannot be predicted with any certainty, the ultimate liability should not have a material adverse effect on the company's consolidated financial position."

34. While such predicted outcomes were the most common, a few corporations did admit that, however unlikely, the outcome could be material. For example, Unocal (United States) stated that:

> "Even though unlikely, an adverse decision awarding punitive damage to several plaintiffs or imposing several liability for clean-up obligations of other equally responsible parties, however, could have a substantial effect on the company's financial position."

35. This corporation's disclosure is especially interesting as it also explained in considerable detail why corporations apparently had so much difficulty in quantifying the size of their contingent liabilities:

> "The present state of the law, which imposes joint and several liability on defendants, the potentially large number of claimants for any given site or exposure, the uncertainty attendant to the possible award of punitive damages, the imprecise and conflicting engineering evaluation and estimates of proper clean-up methods and costs, and the recent judicial recognition of new causes of action, all contribute to the practical impossibility of making any reasonable estimate of the company's potential liability for any one or all of these environmental matters."

36. As mentioned above, disclosure of actual costs incurred or quantification of expected outcomes was far less common, although such disclosures were sometimes found.

VIII. FINANCIAL EFFECTS OF ENVIRONMENTAL PROTECTION MEASURES

37. A majority of the sample corporations disclosed information on the financial effects of environmental protection measures. As discussed above, in nearly all cases this information was provided in either the general review of operations or a special environmental protection statement. Thus, while 150 corporations (68 per cent) provided some information on the financial effects of the environmental protection measures undertaken, as shown in table 7, only 3 corporations (1 per cent) disclosed the costs incurred in the notes to the accounts. As for most types of information disclosures, clear industry differences emerged. The highest disclosure level was found in the forestry industry (93 per cent) while the majority of the chemical, petrochemical and metals industries also provided information (82 per cent, 76 per cent and 66 per cent respectively). In contrast, only 46 per cent of the motor corporations and 32 per cent of the pharmaceuticals corporations provided any information.

38. Looking at the types of information disclosed reveals that quantified information, namely, disclosures of the actual amount of expenditure incurred, was more common than purely qualitative or descriptive comments regarding the levels of expenditure (40 per cent versus 28 per cent). This relationship held for all industries with the exception of the motor industry where, in contrast, only 8 per cent of the corporations quantified any of the relevant expenditures, while, instead, 38 per cent provided qualitative descriptions.

39. With respect to the period covered, the most commonly disclosed item was information regarding expenditures for the current year. Such information was provided by 28 per cent of the sample. The next most common item was forecast information, disclosed by only 12 per cent. However, the forestry industry was an exception to this, with 42 per cent of corporations providing forecast information and only 36 per cent providing details of expenditures made in the

Table 7. Disclosure of information on financial effects of environmental protection measures

Item disclosed	All corporations (222)		Pharmaceuticals (28)		Motors (37)		Metals (38)		Forestry (31)		Petrochemicals (38)		Chemicals (50)	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Quantified information	87	40	7	25	3	8	20	53	17	55	16	42	24	48
Unquantified information	63	28	2	7	14	38	5	13	12	39	13	34	17	34
Information relating to														
Operating costs	35	16	1	4	0	0	7	18	5	16	8	21	14	28
Capital expenditures	99	45	5	18	2	5	20	53	21	68	22	58	29	58
Research and development expenditures	86	39	3	11	16	43	18	47	11	36	19	50	19	38
Remedial expenditures	25	11	4	15	0	0	1	3	2	7	5	13	13	26
Total expenditures only	33	15	2	7	1	3	3	8	8	26	7	18	12	24
Period covered														
Current year	63	28	3	11	5	14	6	16	11	36	20	52	18	36
Future periods	26	12	1	4	2	5	3	9	13	42	3	8	4	8
Past periods	25	11	3	11	2	5	6	16	6	19	2	5	6	12
Not specified	51	23	2	7	9	24	13	34	4	13	8	21	15	30
	Total of corporations disclosing information													
	150	68	9	32	17	46	25	66	29	93	29	76	41	82

Note: Figures in parentheses to the right of column headings represent total number of corporations responding to survey.

/...

current period. Fully 23 per cent provided information while not specifying the time period that information related to. This practice occurred when the disclosures made were qualitative only.

40. The most common type of information found was that relating to capital expenditures, provided by 99 corporations (45 per cent), as shown in table 8. The clear majority of corporations disclosed the actual amount spent, and only 17 per cent did not provide details of either past, current or forecast expenditures. These incidences were in clear contrast to those for information on research and development expenditures. While this was the second most common type of information, provided by 86 corporations (39 per cent), only 5 corporations (2 per cent) provided quantified details of the amount spent; and 81 corporations (36 per cent) provided only qualitative details (see table 9). There were other differences in incidences of disclosure between the two types of information. In particular, differences in the incidence of disclosure across the six industries were greater for capital expenditure information than for research and development information. For capital expenditures disclosure of information varied from a high of 68 per cent for the forestry industry to only 5 per cent for motors. In contrast, for research and development expenditures, the highest incidence was found in the petrochemicals industry (50 per cent) and the lowest in pharmaceuticals (11 per cent).

41. Looking in more detail at the disclosure of actual amounts spent makes it apparent that in virtually all cases this information was provided for the entire corporation with no geographical or industrial breakdown given. In the few cases where any breakdown was provided it was related to domestic and overseas operations, as in the case of Degussa (Germany):

> "The running costs of our environmental protection installations amounted to DM 172 million for the group as a whole (1988/89: DM 165 million), including DM 149 million (1988/89: DM 142 million) in Germany.
>
> "Investment in environmental protection plant and equipment by the Group amounted to DM 32 million (1988/89: DM 16 million), including DM 23 million (1988/89: DM 13 million) in Germany."

42. As previously mentioned, the most common quantitative information was on the amount of capital expenditures. That was often the only quantitative information provided, as illustrated by Georgia-Pacific (United States):

> "Georgia-Pacific's capital expenditures for pollution control facilities and equipment were $164 million during the past five years, with additional ongoing expenses incurred to maintain environmental regulatory compliance."

Table 8. Disclosure of information on amount of capital expenditures

Item disclosed	All corporations (222)		Pharmaceuticals (28)		Motors (37)		Metals (38)		Forestry (31)		Petrochemicals (38)		Chemicals (50)	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Amount spent in														
Current period	53	24	3	11	1	3	8	21	9	29	11	29	21	42
Past periods	23	10	2	7	0	0	5	13	6	19	3	8	7	14
Future periods	27	12	2	7	0	0	4	11	7	23	7	18	7	14
Amount spent not stated	38	17	1	4	1	3	10	26	9	29	10	26	7	14
General statement only	40	18	2	7	1	3	7	19	8	26	7	18	15	30
Description of measures related to expenditure	59	27	3	11	1	3	13	34	13	42	15	40	14	28
Measures described														
Liquid effluent treatment	27	12	1	4	1	3	5	13	9	29	5	13	6	12
Waste gas and air treatment	38	17	2	7	1	3	10	26	6	19	10	26	9	18
Solid waste treatment	14	6	0	0	0	0	4	11	6	19	1	3	3	6
Remediation	4	2	0	0	0	0	2	5	1	3	1	3	0	0
Recycling	16	7	1	4	1	3	5	13	5	16	3	8	1	2
Products	6	3	0	0	0	0	0	0	3	10	3	8	0	0
Power usage	5	2	0	0	1	3	2	5	0	0	1	3	1	2
Other	20	9	1	4	0	0	8	21	2	7	4	11	5	10
Total of corporations disclosing information	99	45	5	18	2	5	20	53	21	68	22	58	29	58

Note: Figures in parentheses to the right of the column headings represent total number of corporations responding to survey.

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Table 9. Disclosure of information on amount of research and development expenditures

Item disclosed	All corporations (222)		Pharmaceuticals (28)		Motors (37)		Metals (38)		Forestry (31)		Petrochemicals (38)		Chemicals (50)	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Amount spent														
Quantified	5	2	0	0	1	3	2	5	0	0	2	5	0	0
Unquantified	81	36	3	11	15	40	16	42	11	36	17	45	19	38
General statement only	6	3	0	0	0	0	2	5	3	10	0	0	1	2
Description of measures														
Costs related to	80	36	3	11	16	43	16	42	8	26	19	50	18	36
Measures described														
Liquid effluent treatment	16	7	0	0	0	0	2	5	4	13	4	11	6	12
Waste gas and air treatment	43	19	1	4	12	32	8	21	1	3	14	37	4	14
Solid waste treatment	7	3	0	0	0	0	1	3	2	7	2	5	2	4
Remediation	3	1	0	0	1	4	0	0	0	0	2	5	0	0
Recycling	21	9	1	4	4	11	6	16	2	7	4	11	4	8
Products	41	19	1	4	11	30	6	16	2	7	12	32	9	18
Power usage	12	5	0	0	8	22	0	0	0	0	2	5	2	4
Other	34	15	2	7	7	19	7	18	3	10	7	18	8	16
					Total of corporations disclosing information									
	86	39	3	11	16	43	18	47	11	36	19	50	19	38

Note: Figures in parentheses to the right of the column headings represent total number of corporations responding to survey.

43. When more than one type of expenditure was given, in most cases all types were related to capital expenditures and operating expenditures. In most cases where operating expenditures were provided they were disclosed alongside capital expenditures, as illustrated by Degussa (Germany) above. However, there were a few cases where only operating expenditures were provided, as illustrated by Wacker-Chemie (Germany):

> "At Wacker-Chemie we regard environmental safety as a vital investment for the future and, in consequence, our investments in environmental protection have climbed rapidly over the past years. The total operating costs for environmental protection have risen to just under DM 90 million per year. This is an increase of over 700 per cent since 1975. By comparison, production increased by just 200 per cent in the same period."

44. While a breakdown of expenditures into capital expenditures and operating expenditures was the most common one, a handful of corporations disclosed various other breakdowns. One of the most interesting was that of Ciba-Geigy (Switzerland) which, instead, separated expenditures into those related to product safety, those related to process safety and those related to production. Other interesting examples include Schering (Germany), which disclosed the costs of environmental protection facilities, operating costs for waste recovery and disposal facilities, environmental protection department costs and the costs of preventive and clean-up operations, and Olin (United States), which split costs into normal plant operations and investigatory and remedial efforts.

IX. OTHER ENVIRONMENTAL INFORMATION: SPECIAL REPORTS AND ENVIRONMENTAL AUDITS

45. In addition to the information recommended by the Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting, two areas of disclosure that were considered to be of special interest were also considered, namely, (a) availability of additional environmental information contained in special reports and (b) information on environmental audits.

46. Noranda (Canada) perhaps best summed up the type of information available in special environmental reports when it described the two types it produced in the following terms:

> "The reports will be a straightforward accounting of compliance records, emission levels, discharges and capital expenditures devoted to the environment. They will not be entirely good news stories but ones we believe our shareholders have a right to know."

47. As shown in table 10, special environmental reports were provided by only nine corporations (4 per cent). In addition, they appeared to be, in particular, a North American/United Kingdom of Great Britain and Northern

Table 10. Other environmental information disclosures

Disclosure	All corporations (222)		Pharmaceuticals (28)		Motors (37)		Metals (38)		Forestry (31)		Petrochemicals (38)		Chemicals (50)	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Separate environmental statement available	9	4	2	7	0	0	1	3	3	10	1	3	2	4
Reference to environmental audits	23	10	2	7	1	1	1	3	3	10	8	21	8	16
Total of corporations disclosing information	29	13	4	14	1	3	2	5	5	16	8	21	9	18

Note: Figures in parentheses to the right of the column headings represent total number of corporations responding to survey.

Ireland phenomenon. This low level of disclosure was somewhat disappointing, as such reports appear to offer many advantages. They allow the annual report and accounts to clearly retain their traditional role of providing an essentially financial view of the corporation while enabling the interested reader to obtain a very much fuller picture of the environmental activities and impacts of the corporation than is normally available inside the somewhat constrained limits of the annual report.

48. One indication of the seriousness with which corporations view their commitment to the environment may perhaps be gauged by whether or not they conduct an environmental audit of their operations and activities. A total of 23 corporations (10 per cent) indicated that such environmental audits were undertaken (see table 10). That they appear to have been particularly common in the petrochemical and chemical industries (undertaken by 21 per cent and 16 per cent of corporations respectively) probably reflects the fact that such audits had grown out of pre-existing safety audits that were likely to be of especial importance in those industries. Again, the amount of information provided varied considerably - from simple statements that regular audits existed to very detailed information, as in the case of Stora (Sweden), which described the genesis, geographical scope, specific items checked and coverage of the audits, as well as gave an indication of the outcome of prior audits.

X. CONCLUSIONS

49. What was most apparent from this survey of environmental disclosures was the high level of interest or awareness in environmental matters, with 86 per cent of the sample having provided at least some information. It would appear that the level of disclosure had increased greatly in comparison with the much lower levels of disclosure found in surveys of a somewhat earlier date. 3/ However, while this high level of disclosure may be taken as an encouraging sign it is also apparent that most corporations complied with only a very small number of the Group's recommendations.

50. As had been found in earlier surveys, the most common disclosures continued to be qualitative or descriptive in nature, covering in particular environmental policies, attitudes and descriptions of improvements achieved in key areas. As such, those disclosures tended to be partial and difficult to compare either across corporations or over time. This in turn means that it became very difficult, if not impossible, to gain an objective view of a corporation's performance in the area of environmental disclosures. Indeed, there is evidence to suggest that there is little connection between the amount of information now being disclosed in that area and a corporation's actual environmental performance. 4/ However, despite this, such disclosures are not necessarily without value. The disclosure of environmental policies or descriptions of actions undertaken may not only impact upon the behaviour of readers of the accounts, but, perhaps more important, the mere act of reporting may encourage emphasis by the corporation itself on the importance of environmental awareness and thus provide an impetus towards further action. 5/

51. Far less common than such qualitative descriptions were quantitative data of any kind. When these appeared they most often dealt with one of three subjects: emission levels achieved and emission levels achieved relative to targets; financial effects of environmental protection measures; and contingent liabilities. A significant minority of corporations (19 per cent) disclosed information upon the actual emission levels achieved. While this was objective information that could be readily assessed by the interested reader, its usefulness was all too often minimized in so far as such information most often covered a small number of plants and a limited number of types of emissions. Also, it was often reported in terms of the percentage reduction achieved rather than of the actual emission levels achieved. Furthermore, only four corporations quantitatively compared actual emissions with targets.

52. The disclosure of financial information was relatively common. While increasing numbers of North American corporations were providing such information it would appear to have been especially prevalent in reports from continental European corporations. Forty per cent of those surveyed quantified such information. The final type of information found was information about contingent liabilities. Despite the fact that all those surveyed were in sectors having significant environmental impacts, only seven (3 per cent) reported on environmental liabilities. Such disclosures appear to have been almost entirely a United States phenomenon and were in direct response to the Securities and Exchange Commission requirements in this area. Again, while such information was doubtless not without value, as discussed above, most disclosures in this area were fairly vague and tended to provide little in the way of detail despite increased guidance by the Securities and Exchange Commission.

53. One major problem concerning environmental actions that few corporations appeared to have yet tackled was the question of how to report the output achieved relative to the input expended. Thus, for example, while the initiation of major environmental programmes, large percentage reductions in emissions and large financial expenditures may have indicated that a corporation was improving its performance, it may have also indicated that the corporation had major environmental problems. In contrast, the existence of no new programmes, stable emission levels and little financial expenditure may have indicated either that a corporation was ignoring such problems or that there was little room for further improvement, in so far as the corporation had done extremely well in the past. However, there were a few instances of corporations attempting to provide a more comprehensive report which included a comparison of programmes, improvements related to targets and the financial effects. It was particularly heartening to see a small number of corporations providing fairly detailed objective information, not just on the level of expenditures but, perhaps more important, on the extent to which they were meeting or exceeding governmental requirements or industry norms.

54. Given the high awareness of environmental issues but the rather low level of quantitative and consistent disclosure, the Group may wish to return to the recommendations in document E/C.10/AC.3/1991/5. It might be time to release

minimum guidelines that would improve reporting on environmental improvements, environmental emissions, compliance with existing legislation and the financial effects of such action on expenditures and liabilities.

Notes

1/ For a review of recent developments, see Green Accounting, R. Gray and R. Laughlin, eds., a special issue of Accounting, Auditing and Accountability Journal, vol. 4, No. 3 (1991); and Green Reporting: Accountancy and the Challenge of the Nineties, D. Owen, ed. (New York, Routledge, Chapman and Hall, 1991).

2/ Fortune (30 July 1990).

3/ C. B. Roberts, "International trends in social and employee reporting", ACCA occasional research paper No. 6 (London, Chartered Association of Certified Accountants, 1990).

4/ See A. Belkaoui and P. G. Karpik, "Determinants of the corporate decision to disclose social information", Accounting, Auditing and Accountability Journal, vol. 2, No. 1 (1989), pp. 36-51; J. W. Rockness, "An assessment of the relationship between US corporate environmental performance and disclosure", Journal of Business Finance and Accounting (autumn 1985), pp. 339-345; and J. Wiseman, "An evaluation of environmental disclosures made in corporate annual reports", Accounting, Organisation and Society, vol. 7, No. 1 (1982), pp. 53-63.

5/ R. Gray, "The greening of accountancy: the profession after Pearce", ACCA research report No. 17 (London, Chartered Association of Certified Accountants, 1990).

Annex I

SAMPLE CORPORATIONS

Corporation	Country	Year-end	Turnover (Millions of monetary units*)	
Chemicals industry				
L'Air Liquide	France	12/89	FF	28 251
Air Products	United States	9/90	US$	2 913
AKZO	Netherlands	12/90	f.	17 246
American Cyanamid	United States	12/90	US$	4 570
Asahi Chemical	Japan	3/90	¥	1 176 640
BASF	Germany	12/90	DM	46 623
Bayer	Germany	12/90	DM	41 643
BOC	United Kingdom	9/90	£ stg.	2 644
Ciba-Geigy	Switzerland	12/90	SF	20 126
Courtaulds	United Kingdom	3/91	£ stg.	1 912
Dai Nippon	Japan	3/90	¥	1 074 515
Dow	United States	12/90	US$	19 773
DSM	Netherlands	12/90	f.	10 164
Du Pont	United States	12/90	US$	40 047
Ethyl	United States	12/90	US$	2 514
FMC	United States	12/90	US$	3 722
Freudenberg	Germany	12/90	DM	4 273
Gechem	Belgium	12/90	BF	54 340
B F Goodrich	United States	12/90	US$	2 433
W R Grace	United States	12/90	US$	6 754
Groupe EMC	France	12/89	FF	16 620
Henkel	Germany	12/90	DM	12 017
Hercules	United States	12/90	US$	3 200
Hoechst	Germany	12/90	DM	44 862
Hüls	Germany	12/89	DM	8 934
ICI	United Kingdom	12/90	£ stg.	12 906
Kemira	Finland	12/90	Fmk	11 382

* Abbreviations denote the following currencies: $A, Australian dollar; BF, Belgian franc; $Can, Canadian dollar; $Ch, Chilean peso; DKr, Danish Krone; DM, Deutsche mark; f., Netherlands guilder; FF, French franc; Fmk, markka; KD, Kuwaiti dinar; Lit, lira; LuxF, Luxembourg franc; NKr, Norwegian krone; $NZ, New Zealand dollar; Ptas, peseta; Rs, Indian rupee; SKr, Swedish krona; SwF, Swiss franc; US$, United States dollar; W, won; ¥, yen; and £ stg., pound sterling.

Corporation	Country	Year-end	Turnover (Millions of monetary units*)	
Chemicals industry (continued)				
Mitsubishi Gas	Japan	3/90	¥	285 866
Mitsubishi Kasei	Japan	3/90	¥	1 154 409
Mitsui Petrochemical	Japan	3/90	¥	328 518
Mitsui Taotsu	Japan	3/90	¥	449 778
Monsanto	United States	12/90	US$	8 995
Montedison	Italy	12/90	Lit	14 739 000
Nobel Industries	Sweden	12/90	SKr	26 399
Norddeutsche Affinerie	Germany	9/90	DM	2 184
Norsk Hydro	Norway	12/90	NKr	60 972
Olin	United States	12/90	US$	2 592
PPG	United States	12/90	US$	6 021
Quantum	United States	12/90	US$	2 656
Rhone-Poulenc	France	12/90	FF	78 810
Roche	Switzerland	12/90	SwF	9 670
Rohm & Haas	United States	12/90	US$	2 824
Sandoz	Switzerland	12/90	SwF	12 367
Sekisui	Japan	3/90	¥	710 970
Showa Denko	Japan	12/90	¥	569 651
Solvay	Belgium	12/90	BF	255 241
Sumitomo	Japan	12/90	¥	1 068 463
Toray	Japan	3/91	¥	917 144
Union Carbide	United States	12/90	US$	7 621
Wacker-Chemie	Germany	12/90	DM	3 241
Forestry and forestry products				
Abitibi-Price	Canada	12/90	$Can	3 088
ASSI	Sweden	12/90	SKr	7 660
Boise Cascade	United States	12/90	US$	4 186
Buhrmann-Tetterode	Netherlands	12/90	f.	5 561
Canadian Pacific	Canada	12/90	$Can	10 500
Champion International	United States	12/90	US$	5 090
Enso-Gutzeit	Finland	12/90	Fmk	10 287
Fletcher Challenge	New Zealand	6/90	$NZ	13 324
Georgia-Pacific	United States	12/90	US$	12 665
Great Northern Nekoosa	United States	12/89	US$	3 588
International Paper	United States	12/90	US$	12 900
James River	United States	4/90	US$	5 950
Joju Paper	Japan	3/91	¥	402 909
Kimberly-Clark	United States	12/90	US$	6 407
KNP (Royal Dutch Papermills)	Netherlands	12/90	f.	2 236

Corporation	Country	Year-end	Turnover (Millions of monetary units*)	
Forestry and forestry products (continued)				
Kymmene	Finland	12/90	Fmk	13 556
MacMillan Bloedel	Canada	12/90	$Can	3 003
Mead	United States	12/90	US$	4 772
Metsa Serla	Finland	12/90	Fmk	8 735
MoDo	Sweden	12/90	SKr	18 435
Noranda	Canada	12/90	$Can	9 434
Oji Paper	Japan	3/90	¥	468 945
Repap	Canada	12/90	$Can	1 102
Sanyo Kokusaku	Japan	3/90	¥	441 479
SCA	Sweden	12/90	SKr	31 122
Scott Paper	United States	12/90	US$	5 356
Stone Container	United States	12/90	US$	5 756
Stora	Sweden	12/90	SKr	62 369
Sumitomo Forestry	Japan	3/90	¥	334 351
Union Camp	United States	12/90	US$	2 890
Weyerhaeuser	United States	12/90	US$	9 024
Metals				
Alcan	Canada	12/90	US$	8 757
Alusuisse	Switzerland	12/90	SwF	6 334
Arbed	Luxembourg	12/90	LuxF	208 764
Babcock	Germany	9/90	DM	5 802
BHP	Australia	5/90	$A	14 045
British Steel	United Kingdom	8/90	£ stg.	5 113
CMB Packaging	France	12/90	FF	24 415
Cockerill Sambre	Belgium	12/90	BF	203 110
Cookson	United Kingdom	12/90	£ stg.	1 468
Degussa	Germany	9/90	DM	13 925
Dofasco	Canada	12/90	$Can	3 250
Furukawa Electric	Japan	3/90	¥	765 830
Hoogovens	Netherlands	12/90	f.	8 174
Imetal	France	12/90	FF	19 909
Inland Steel	United States	12/89	US$	4 147
IRI	Italy	12/89	Lit	56 647 000
Johnson Matthey	United Kingdom	3/90	£ stg.	1 514
Kawasaki Steel	Japan	3/90	¥	1 112 300
Klöckner-Werke	Germany	9/90	DM	5 847
Kobe Steel	Japan	3/90	¥	1 221 800
LTV	United States	12/89	US$	6 362
Mannesmann	Germany	12/90	DM	23 943

Corporation	Country	Year-end	Turnover (Millions of monetary units*)	
Metals (continued)				
Metallgesellschaft	Germany	9/90	DM	19 828
Mitsubishi Metal	Japan	3/90	¥	789 182
Nippon Light Metal	Japan	3/90	¥	575 945
Nippon Steel	Japan	3/90	¥	2 972 800
Nisshin Steel	Japan	3/90	¥	459 346
Outokumpu	Finland	12/90	Fmk	11 982
Pechiney	France	12/90	FF	76 869
Preussag	Germany	9/90	DM	19 046
Rauma Repola	Finland	12/90	Fmk	13 139
Stelco	Canada	12/90	$Can	2 101
Sumitomo Electric Industries	Japan	3/90	¥	1 001 037
Sumitomo Metal	Japan	3/90	¥	1 119 600
Svenskt Stal	Sweden	12/90	SKr	15 619
Thyssen	Germany	9/90	DM	36 185
Toyo Sash	Japan	3/90	¥	412 034
VIAG	Germany	12/90	DM	19 423
Motors				
Aisin Industry	Japan	3/90	¥	485 500
Robert Bosch	Germany	12/90	DM	31 823
BMW	Germany	12/90	DM	27 178
Chrysler	United States	12/90	US$	30 620
Cummins	United States	12/90	US$	3 462
Daihatsu	Japan	3/90	¥	766 070
Daimler-Benz	Germany	12/90	DM	85 500
Dana	United States	12/90	US$	5 185
Eaton	United States	12/90	US$	3 639
Fiat	Italy	12/89	Lit	52 019 000
Ford	United States	12/90	US$	97 650
Fuji Heavy Industries	Japan	3/89	¥	633 442
General Motors	United States	12/90	US$	124 705
GKN	United Kingdom	12/90	£ stg.	2 596
Hino Motors	Japan	3/90	¥	599 933
Honda	Japan	3/91	¥	4 301 518
Lucas	United Kingdom	7/90	£ stg.	2 229
Mazda	Japan	3/90	¥	2 402 276
Mitsubishi	Japan	3/90	¥	2 360 702
Navistar	United States	10/90	US$	3 854
Nippon Seiko	Japan	3/90	¥	334 219

Corporation	Country	Year-end	Turnover (Millions of monetary units*)	
Motors (continued)				
Nissan Diesel	Japan	3/90	¥	350 659
Nissan Motor	Japan	3/90	¥	5 645 169
Paccar	United States	12/90	US$	2 587
Pacific Dunlop	Australia	6/90	$A	5 048
PSA	France	12/90	FF	152 955
Renault	France	12/89	FF	174 477
Saab-Scania	Sweden	12/90	SKr	29 035
SEAT	Spain	12/90	Ptas	503 297
Suzuki	Japan	3/90	¥	982 573
Toyoda Automatic Loom Works	Japan	3/90	¥	491 514
Toyota	Japan	6/90	¥	9 192 838
TRW	United States	12/90	US$	8 169
Valeo	France	12/90	FF	20 186
Volkswagen	Germany	12/90	DM	68 061
Volvo	Sweden	12/90	SKr	83 185
Yamaha Motor	Japan	3/90	¥	592 559
Petroleum and petrochemicals				
Amerada Hess	United States	12/90	US$	6 948
Ashland	United States	9/90	US$	9 048
BP	United Kingdom	12/90	£ stg.	33 039
Burmah Castrol	United Kingdom	12/90	£ stg.	1 723
Chevron	United States	12/90	US$	42 566
Coastal	United States	12/90	US$	9 381
Elf Aquitaine	France	12/90	FF	175 479
ENAP	Chile	12/90	$Ch	520 952
Exxon	United States	12/90	US$	116 940
Idemitsu Kosan	Japan	3/90	¥	1 710 581
Indian Oil	India	3/90	Rs	98 553 466
Kerr-McGee	United States	12/90	US$	3 683
FK Industri	Sweden	12/90	SKr	22 809
Kuwait Petroleum	Kuwait	6/89	KD	3 741
Lyondell Petrochemical	United States	12/90	US$	6 495
Mapco	United States	12/89	US$	2 113
Mitsubishi Oil	Japan	3/90	¥	788 505
Mobil	United States	12/90	US$	54 361
Neste	Finland	12/90	Fmk	46 626
Nippon Mining	Japan	3/90	¥	1 015 878
Nippon Oil	Japan	3/90	¥	2 515 000
Nova	Canada	12/90	$Can	4 736

Corporation	Country	Year-end	Turnover (Millions of monetary units*)	
Petroleum and petrochemicals (continued)				
Pennzoil	United States	12/90	US$	2 366
Petro-Canada	Canada	12/90	$Can	5 873
Petrofina	Belgium	12/90	BF	577 692
Phillips Petroleum	United States	12/90	US$	13 975
Pioneer	Australia	6/90	$A	5 047
Repsol	Spain	12/90	Ptas	1 572 000
Royal Dutch/Shell	United Kingdom/ Netherlands	12/90	£ stg.	59 416
Ssangyong	Korea, Republic of	12/90	W	5 729 794
Statoil	Norway	12/90	NKr	72 356
Sun	United States	12/90	US$	13 376
Texaco	United States	12/90	US$	41 822
Total	France	12/90	FF	128 445
Total North America	Canada	12/90	$Can	2 725
Ultramar	United Kingdom	12/90	£ stg.	1 761
Unocal	United States	12/90	US$	11 508
USX	United States	12/90	US$	20 659
Pharmaceuticals, soaps and cosmetics				
Abbott Laboratories	United States	12/90	US$	6 158
American Home Products	United States	12/90	US$	6 775
Avon	United States	12/90	US$	3 453
Beiersdorf	Germany	12/90	DM	3 952
Boehringer Ingelheim	Germany	12/90	DM	4 632
Bristol-Myers Squibb	United States	12/89	US$	9 189
Colgate Palmolive	United States	12/90	US$	5 691
East Asiatic Company	Denmark	12/90	DKr	15 816
Eli Lilly	United States	12/90	US$	5 191
Fujisawa	Japan	3/90	¥	230 201
Glaxo	United Kingdom	6/90	£ stg.	2 854
Johnson & Johnson	United States	12/90	US$	11 232
Kao	Japan	3/90	¥	620 429
Lion Corporation	Japan	12/90	¥	314 906
Merck	United States	12/90	US$	7 671
L'Oreal	France	12/90	FF	30 359
Procordia	Sweden	12/90	SKr	37 033
Procter & Gamble	United States	6/90	US$	24 081
Reckitt & Colman	United Kingdom	12/90	£ stg.	1 764
Sanko	Japan	3/90	¥	425 635
Schering	Germany	12/90	DM	5 923

Corporation	Country	Year-end	Turnover (Millions of monetary units*)	
Pharmaceuticals, soaps and cosmetics (continued)				
Schering-Plough	United States	12/90	US$	3 323
Shionogi	Japan	3/90	¥	213 223
Smith Kline Beecham	United Kingdom	12/90	£ stg.	4 764
Takeda	Japan	3/90	¥	694 399
Tanabe Seiyaku	Japan	3/91	¥	239 562
Upjohn	United States	12/90	US$	3 021
Warner-Lambert	United States	12/90	US$	4 687

Annex II

COUNTRY OF DOMICILE OF SAMPLE CORPORATIONS

	Total sample		Pharmaceuticals		Motors		Metals		Forestry		Petrochemicals		Chemicals	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
United States	65	29	12	43	9	24	2	5	12	39	15	39	15	39
Japan	49	22	7	25	14	38	10	26	4	13	4	18	10	20
Germany	23	10	3	11	4	11	8	21	-	-	-	-	8	16
United Kingdom	15	7	3	11	2	5	3	8	-	-	4	10	3	6
France	12	5	1	4	3	8	3	8	-	-	2	5	3	6
Canada	11	5	-	-	-	-	3	8	5	16	3	8	-	-
Sweden	10	4	1	4	2	5	1	3	4	13	1	3	1	2
Finland	7	3	-	-	-	-	2	5	3	10	1	3	1	2
Netherlands	5	2	-	-	-	-	1	3	-	-	1	3	2	4
Belgium	4	2	-	-	-	-	1	3	-	-	1	3	2	4
Switzerland	4	2	-	-	-	-	1	3	-	-	-	-	2	4
Italy	3	1	-	-	1	3	1	3	-	-	-	-	1	2
Australia	3	1	-	-	1	3	1	3	-	-	1	3	-	-
Rest of world	11	5	1	4	1	3	1	3	1	3	6	16	1	
Total	222	100	28	100	38	100	37	100	31	100	38	100	50	100

Note: A hypen (-) indicates that, for a given country, no corporations in that particular industry participated in the survey.